

## IMPACT OF JAL BHAGIRATHI FOUNDATION INTENSIVE WATERSHED DEVELOPMENT PROJECT ON ITS BENEFICIARY FARMERS IN JODHPUR DISTRICT OF RAJASTHAN

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### ABSTRACT

*The study was conducted purposively selected in Luni block of Jodhpur district of Rajasthan. Four villages were selected purposively and from each selected village 30 respondents were selected randomly thus 120 respondents constituted the sample size for present study. Ex-post Facto research design was followed and data was collected by using personal interview method. The collected data were tabulated, analyzed and interpreted with the appropriate statistical tools. Majority of respondents had medium level of knowledge and adoption towards crop production by watershed project. Education, Family Type, Annual Income were found positive and significant correlation with their knowledge and adoption of bajra under Watershed project. Two types of Respondents were selected from these villages, beneficiaries and non-beneficiaries of Watershed Project. The major constraints faced by the respondents are Time consuming operation, Fragmentation of land into unconventional shape, Water stagnation near bunded area etc. The prominent suggestions given by the respondents were the provision of subsidy for the practices. Govt. should encourage co-operative farming, training should be provided for water conservation and input should be made available at proper time to overcome these constraints.*

**KEYWORDS:** Level of Knowledge, Attitude, Relationship, Watershed, Arid Zone

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### INTRODUCTION

Agriculture development is today's urgent need of developing country. Agriculture is now being treated as business and substantial efforts are being made to increase production. It is a known fact that improved technologies evolved by eminent agricultural scientists do not reach to the door of the farmers in a right manner and at a right time. India is blessed with abundant water resources.

Watershed management is over all development of particular region including water conservation, maintaining soil fertility, pasture land, agriculture, horticulture, forestry and allied aspects. Watershed development projects have been taken up under different programmes launched by the government of India. The basic objective is land and water resource management for sustainable production. Watershed management planning is a process that results in a plan or a blueprint to improve the water quality and other natural resources in a watershed.

For conservation and management of natural resources Jal Bhagirathi Foundation was established as a nonprofit organization on 15 January 2002 in response to the burgeoning water crises facing the Thar Desert in the state of Rajasthan, Western India, and the vast potential for participatory water management as a path to water security. Mainly carried out the following activities such as a forestation, contour, graded bunding, land shaping and for dry land development in watershed basis. Other group of component are use of improved seeds, application of fertilizer, use of improved agronomical practices and better farm implements.

Jal Bhagirathi Foundation is driven by a vision of water security, sustained by responsive governance and inclusive growth, leading to sustainable development. Jal Bhagirathi Foundation exists to provide an enabling environment in which the desert communities of the Marwar region can access adequate drinking water for humans and animals within the constraints of environmental equilibrium by leveraging traditional knowledge and appropriate technology; facilitating village institutions of collective wisdom and building local capacities for community mobilization in an atmosphere of transparency, participation and accountability, through a process of networking and advocacy.

This approach concentrates not only on agriculture and allied activities but also the homestead vocations and situation specific economic activities. Watershed development aims at developing area in an irrigated manner where each activity interlinked with other and has definite role in creating an impact on overall production. Watershed development is aimed at conservation of natural resources and maintaining the ecology of the area by using the simple soil and water conservation techniques. In other words, watershed management is overall development of particular region including water conservation, maintaining soil fertility, pasture land, agriculture, horticulture, forestry and allied aspects. (Anonymous, 2013. Agritech. Tnau.ac.in/agriculture/agr)

Sustainable development aims at maintaining equilibrium between human needs and economic development within the parameters of environmental conservation through the natural resources soil, water and vegetation are most important natural resources for survival of the mankind. They provide food, firewood, fiber and raw material to satisfy a variety of needs of the people. It is well known that the pressure of human and bovine population is threatening the land and water resources. In the recent years pressure on the land resources on our planet has increase tremendously. If it goes on, per capita land availability for food production and other human needs will definitely continue to decline steeply because of increasing population. Density, the deforestation is warming the ground water is depleting quickly problem of soil erosion and land degradation have become serve. These issue need to addressed immediately.

Watershed development is an approach to build and strengthen the basic resources in a watershed so as to enable establishment of sustainable life supports. This is an integrated approach on a natural hydrologic unit.

Watershed is a natural hydrological entity that covers a specific area expands of land surface, within these boundaries. The entire rainfall runoff ultimately passes through a specifically defined stream. So it is a unit of land on which all water that falls collects by gravity, runs via a common outlet it is thus an area of land that contributes runoff to a common point and is separated from adjoining area by a natural elevation ridgeline (Oswal 1999).

The key development objectives is to improve the productive potential of selected watersheds and their associated natural resource base and strengthen community and institutional arrangements for natural resource management. This project primary objective is to increase household income, improve agricultural productivity, Improve vegetative cover, and Increase milk and horticulture production. Increase fodder and fuel availability, enhance quality of life of village communities, reducing soil erosion and runoff to improve water availability and to conserve the moisture status. The Watershed Development Programme is the basic need for integrated development and management of the land and water resources which provide life support for rural communities. The attention has been focused on this programme in order to provide Impetus to development in the country. Increase agricultural production and create employment within the village and make food available to them. Migration to urban areas can be checked and reduce the problem of growing cities. By conserving soil and water ecological balance can be restored. Heavy situations in dams have given rise to many problems related to electricity supply, urban water supply. Industries depend upon this water are also facing problems. (Kansana Vishwananath Singh. 2008).

## RESEARCH METHODOLOGY

The survey was conducted in purposively selected Watershed Development Project of Luni Block of Jodhpur district in Rajasthan. The watershed project was started during the year 2002 in most of the Arid land in the project area is under rainfed farming and this area is most backward. Hence, it requires more efforts to bring changes in the socio- economic conditions of the farmers of this area. Further, easy accessibility and convenience of the student researcher were also taken into account for selection of watershed. Two types of respondents were selected from these villages:

- Beneficiaries of watershed .
- Non-beneficiaries of watershed.

The particular respondents who are participating in watershed activities and the particular respondents who are not participating in watershed activities. From each group, 60 farmers were randomly selected. The total sample, therefore, consisted 120 respondents' farmers in both the group for collection of data. Pre tested interview schedule was used for the collection of data. Appropriate tools were used to interpret the data. The present study was confined to Ex-post factorial research design. The Ex-post – facto research design is an inquiry in which the researcher does not have direct control of independent variable because their manifestations occurred and they cannot be manipulated.

## RESULTS AND DISCUSSION

**Table 1: To determine the knowledge and attitude of the respondents towards activities of Jal Bhagirathi Foundation.**

S.NO	Statement	Fully Correct		Partially Correct		Not Correct		
		<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	
1.	45 Construction of Contour bunds.	45	45	37.5	60	50	15	12.5
2.	35 Construction of Graded Bunds	35	35	29.1	65	54.1	20	16.6
3.	44 Use of live hedges	44	44	36.6	57	47.5	17	14.1
4.	49 Cultivation across the slope	49	49	40.8	63	52.5	8	06.6
5.	40 Use of Drought Resistant varieties.	40	40	33.3	75	62.5	5	04.1

**Table 1 Contd.,**

6.	30 Construction of farm ponds	30	30	25.0	65	54.1	25	20.8
7.	21 Pasture Development	21	21	17.5	64	53.3	35	29.1
8.	15 Construction of diversion channels	15	15	12.5	78	65.0	27	22.5
9.	12 Gully control structures	15	12	1.0	80	66.6	28	23.3
10.	27 Afforestation programme	12	27	22.5	77	64.1	16	13.3

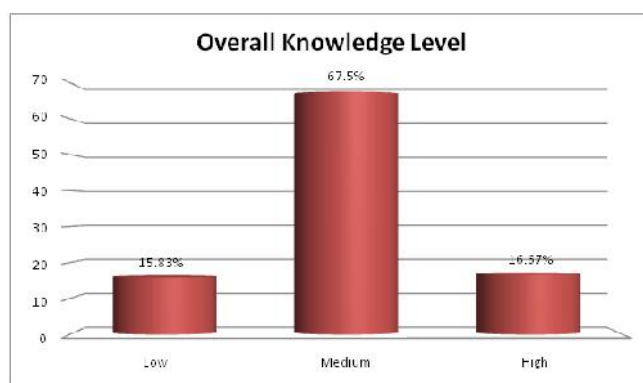
## 2 Overall Knowledge Level of Respondents

The knowledge level of the beneficiary farmers has been documented, categorized, analyzed and presented in table.4.2.2 and fig.4.2.2.

**Table 2: Distribution of Respondents according to their overall Knowledge Level**

S. No.	Knowledge level	Frequency	Percentage
1	Low (1)	19	15.83
2	Medium(3)	81	67.50
3	High(2)	20	16.67
	Total	120	100.00
(n=120)			

From table 2, it can be understood that more than two-third of the beneficiaries had medium level of knowledge (67.50%), followed by high (16.67%) and low (15.83%) level of knowledge respectively.

**Figure 1: Distribution of Respondents according to their Overall Knowledge Level.****Table 3: Attitude level of the Respondents towards Activities of Jal Bhagirathi Foundation**

S. No.	Statement	Agree		Undecided		Decided	
		f	%	f	%	f	%
1.	Adoption of soil and water conservation practices is a boon to farmers	41	34.1	65	54.1	14	11.6
22 2.	Soil and water conservation practices gives higher yields	30 30	22 25.0	65 65	22 54.1	2 25	22 20.8
3 3.	A dryland farmer should be aware of recent soil and water conservation practises	40	33 33.3	60	6 50	20	11 16.6

44	4.	Check dam control soil erosion	45	45	37.5	67	55.8	11	18	11	15.0			
55	5.	Non-Adoption of improved soil and water conservation practices will deplete the soil fertility	3	32	26.6	78	6	65.0	1	11	0	09.1		
66	6.	Investing in soil and water conservation on the farm is important.	33	37	33	30.8	62	55	51.2	2	21	11	17.5	
77	7.	Terracing controlled runoff speed	11	17	11	14.1	77	79	66	65.8	22	24	11	17.5
88	8.	Cover cropping contributed to watershed management	22	22	11	18.3	88	81	66	67.5	77	7	Hi	05.8
99	9.	Brass strips reduce the runoff speed	14	14	11	11.6	77	73	66	60.8	33	33	22	27.5
11	10.	S Soil and water conservation works impede the growth of crops in fields .	22	21	11	17.5	74	61.6	25		2	20.8		

From the above table 3 it can be observed that majority (67.5%) of the respondents are completely agreed that Cover cropping contributed to watershed management. (65.8%) of the respondents agreed that Terracing controlled runoff speed . (65%) of the respondents agreed that Non-Adoption of improved soil and water conservation practices will deplete the soil fertility . (61.6%) of respondents use Soil and water conservation works impede the growth of crops in fields. (60.8%) of respondents agreed by Brass strips reduce the runoff speed.(55.8%) agreed that Check dam can control soil erosion. (54.1%) of respondents agreed that Adoption of soil and water conservation practices is a boon to farmers. (54.1%) respondents agreed by Soil and water conservation practices gives higher yields. (51.6%) respondents agreed that Investing in soil and water conservation on the farm is important. (50%) respondents agreed that A dryland farmer should be aware of recent soil and water conservation practices

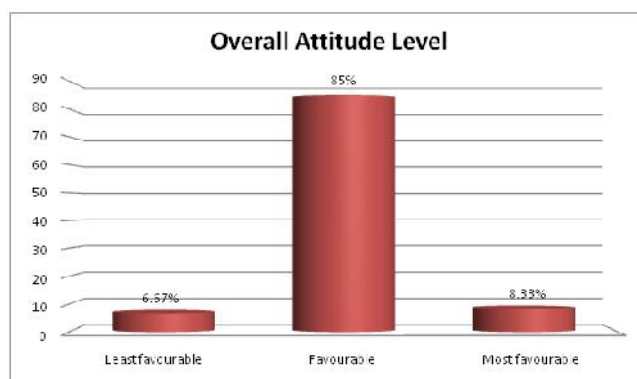
### Overall Attitude level of respondents

The attitude level of the beneficiary farmers has been documented, categorized, analyzed and presented in table.4.2.4 and figure.4

**Table 4: Distribution of Respondents according to their Overall attitude Level**

S. No.	Attitude Level	Frequency(n=120)	Percentage
1	Least favourable	8	6.67
2	Favourable	102	85.00
3	Most favourable	10	8.33
	Total	120	100.00

From table.4, it can be evident that higher proportion of the beneficiaries had favorable level of attitude towards activities of Jal Bhagirathi Foundation (85%), followed by most favorable (8.33%) and least favorable (6.67%) attitude towards activities of Jal Bhagirathi Foundation respectively.



**Figure 2: Distribution of Respondents according to their Attitude Level.**

### 3. Association between selected Independent and Dependent Variables

The association between the independent and dependent variables are presented in table.5

**Table 5: Association between Independent and Dependent Variables**

S. No.	Variable	r-value	Regression co-efficient	Standard error	t-value
X <sub>1</sub>	Age	-0.141	-0.003	0.103	0.975 <sup>NS</sup>
X <sub>2</sub>	Education	0.112*	0.121*	0.054*	0.028*
X <sub>3</sub>	Family size	0.062	0.038	0.060	0.517 <sup>NS</sup>
X <sub>4</sub>	Land holding	-0.038	-0.002	0.060	0.963 <sup>NS</sup>
X <sub>5</sub>	Soil type	-0.070	-0.060	0.050	0.236 <sup>NS</sup>
X <sub>6</sub>	Annual income	0.046*	0.130*	0.062*	0.037*
X <sub>7</sub>	Mass media exposure	0.114**	0.118**	0.064**	0.071**
X <sub>8</sub>	Innovativeness	0.148*	0.076*	0.031*	0.017*
X <sub>9</sub>	Source of irrigation	0.181*	0.126*	0.071*	0.078*
(* - Significant at 5%, **-Significant at 1% , <sup>NS</sup> – Not significant)					

From table.5, it was reported that variables like education and sources of irrigation had positive and significant association with the dependent variable at 5 per cent level of significance. Whereas, annual income and innovativeness of the beneficiaries had negative and significant association with the dependent variables at 5 per cent level of significance. Meanwhile, mass media exposure had positive and significant association at 1 per cent level of significance. Whereas, age, family size, land holding, soil type had no significant association with the dependent variables.

### CONCLUSION

From the study, it was seen that most of the beneficiaries farmers belonged to middle age with junior higher secondary school status, possess small size of family and had more than 5 acres of land holding with shallow type of soil and canal as their major irrigation source. From this, they earn medium level of annual income with medium level of mass media exposure and innovativeness. Meanwhile, they had medium level of knowledge with favorable attitude towards activities of Jal Bhagirathi Foundation. Hence, they revealed positive impact towards the activities of Jal Bhagirathi Foundation watershed development project on its beneficiary farmers. Similarly, education, sources of information, annual income, mass media exposure and innovativeness had significant association with the dependent variables while the variables age, family size, land holding, soil type had no significant association with the dependent variables. Eventually, lack of coordination among the beneficiaries was the first and foremost constraint experienced by the beneficiaries whereas

inadequacy of capital is the least constraint. Eventually, providing regular supply of canal water for irrigation in cropping season was the most suggested factor given by the beneficiary farmers for better adoption of the programme.

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